

Potential Risks and Side Effects of Osteopathic Manual Therapy

By: Jimmy Hu
For: Dr. Shahin Pourgol
NAO DOMP Program
January 23, 2015

Introduction

Chronic pain is a symptom of modern civilization. Many people have experiences of seeking medical and alternative treatments for pain in the bones. The current standard of practice by modern health professionals is to start with painkillers and muscle relaxants, followed by heat therapy, electrotherapy, physical therapy and ultimately surgery. Those whom suffer from short-term symptoms might be prescribed medications, injections, and physiotherapy, while those whom suffer from long-term symptoms may be referred for surgery or alternative therapies such as Osteopathy, Chiropractic, and Massage Therapy to alleviate outstanding pain. Nonetheless, not all alternative therapies are performed by professionals with medical backgrounds, thus it should be important to address the potential risks and side effects for patients and practitioners in order to prevent an unfavorable outcome.

Osteopathic manual therapy (OMT) is used principally in the management of musculoskeletal pain. It can be particularly useful in the elderly, who are more prone to medication side effects. The osteopathic principle states that in order to heal the pain and return your body to normal function, you must correct any structural imbalances within the musculoskeletal system. In truth, painkillers, muscle relaxants, heat therapy, electrotherapy were not designed to correct the imbalance of the body structure. This means that the real reason for the aching pain often has not yet resolved. In order to avoid surgery and completely cure the problem, the body must correct its internal structural abnormality. However, like all other forms of healing, OMT is not without risks and side effects.

With the advances in technology, more patients are self-diagnosing their own conditions and seeking different treatments without consulting proper medical advice. In order to ensure safer osteopathic therapy for patients and protect them from unforeseen consequences, it is vital to create a general standard that will help Osteopathic Manual Practitioners to decide when osteopathy is indicated and when it is not. Every therapist should know exactly which risks are involved in their practice and ensure that the patients will benefit from the therapy rather than suffer from its side effects.

What are the Potential Risks and Side Effects of OMT?

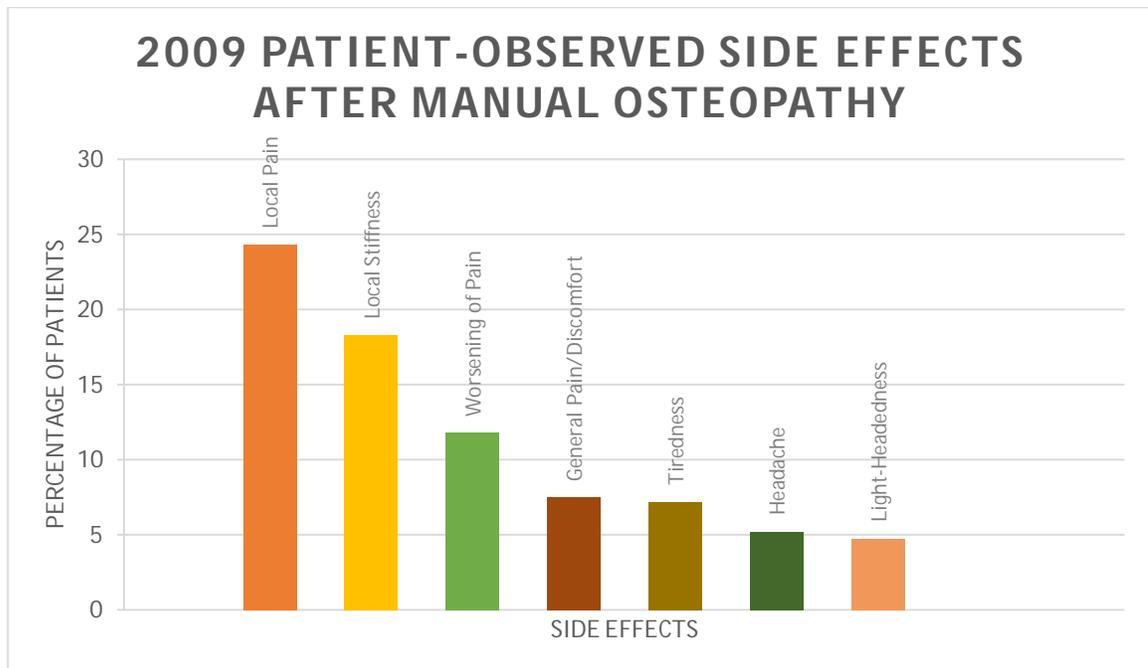
Osteopathic Manual Therapy is considered one of the safest and most non-invasive forms of alternative medical management. Patients rarely experience side effects. However, no system of medical therapy is free from side effects. Majority of side effects that have been reported occur after a patient has undergone chiropractic treatment on the cervical spine (Ernst 2007). Chiropractors or other manual practitioners who employ these forceful types of techniques use spinal manipulation to treat low back and other musculoskeletal pain (Gatterbauer 2009). It often involves a high velocity, low amplitude thrust accompanied by an expectant cracking or popping sound.

In Canada, these forceful spinal manipulation techniques are not utilized in Osteopathy, thus major side effects are dramatically less. OMT focuses on the use three main clinical techniques; they are Mobilization, Muscle Energy Techniques (MET), and Soft-Tissue Techniques. These techniques are gentle and aim to alleviate the dysfunction of the musculoskeletal system, including the spine, joints, muscles, tendons, ligaments, and fascia, while taking into account the individual needs of each patient (Gatterbauer 2009).

It is not unusual for the patients to feel less optimal before they begin to feel better after therapy. The body requires time to process the therapeutic inputs and adjust itself toward a state of homeostasis. As the body recovers, symptoms may exacerbate and physiologic metabolisms may fluctuate. It is typical for some patients to experience localized tenderness, stiffness, numbness, weakness, headaches, diarrhea, and menstrual changes (Carnes, Mars et al. 2010). Two recent studies investigated patients' responses to treatment.

General Osteopathic Council (UK) conducted a systematic review based on 8 cohort studies and 31 randomized controlled trials that explored the incidence and risk of adverse events with manual therapies. The study found the risk of major adverse events to be lower than taking medication and around half of patients experience minor to moderate adverse effects within 24 hours after manual therapy, but resolve within 72 hours (Carnes, Mars et al. 2010). While the study did not distinguish osteopathic manual therapy from the other types of manual therapy, it is for certain that the documented events have come from professions that uses spinal manipulation.

Another study done by the European School of Osteopathy found that 93% of patients reported at least one adverse event following treatment at an osteopathic teaching clinic. The results are based on 52 adult patients who have experienced an "additional effect after treatment". Below is a chart that illustrates the most commonly patient-observed side effect after manual osteopathy (Rajendran, Mullinger et al. 2009).



The incidence of most adverse events to treatment ranges from a day to a week. Majority of the side effects were gone after 7 days post-treatment. Although the side effects are relatively rare, patients should be made aware of these experiences. Utilizing gentle osteopathic techniques further reduces the occurrences of these symptoms. The study demonstrated how common it is for some patients to experience mild muscle soreness, fatigue, or tenderness, similar to delayed onset muscle soreness after excessive exercises.

It should be important to point out that manual osteopathy cited in most international journals and articles have come from research within manual medicine. The term manual osteopathy used in Canada does not offer the same weight as manual osteopathy observed elsewhere. This is because manual osteopathy is generally performed by osteopathic physicians and other professions that utilizes spinal manipulation. In contrast, spinal manipulation can only be legally performed by chiropractors in Canada. Osteopathic Manual Practitioners in Canada practice a form of manual osteopathy without spinal manipulation and devoid of any kind of high velocity maneuvers. OMT are generally more rhythmical and softer when compared to its Chiropractic counterpart (Pourgol 2014). Even so, manual osteopathy is still very dependent upon the skill of the practitioner.

What are the Contraindications of OMT?

Osteopathy uses very gentle techniques that work on the musculoskeletal system. There are not a great number of contraindications in OMT. Techniques that rank the highest in the number of contraindications are high velocity thrust techniques, which do not apply to OMTs in Canada. In medicine, there is a distinction between an "absolute" and a "relative" contraindication. An absolute contraindication means that a therapeutic method must never be used for a conflicting condition that will result in a fatal consequence. A relative contraindication means that the risks of the therapy have to be carefully assessed such that the benefits to the patient will outweigh the risks after it is initiated.

Although OMT is a highly safe procedure, there are still many potential risks associated with its use. Not only will the client not benefit from such therapy, but can suffer serious complications. The primary risk identified in the literature is hyperextension coupled with rotation of the upper cervical spine due to concern regarding potential occlusion of the vertebral artery (Rothwell, Bondy et al. 2001, Chila and Association 2010).

Below are the major considerations for manual osteopaths to be aware of when performing OMT. Even though the Canadian osteopathic profession does not permit spinal manipulation or high velocity techniques, these conditions can still pose serious threats to general osteopathic practices.

Commonly accepted contraindications include the following:

1. Poor blood circulation, especially in Vertebrobasilar Artery: If the patient suffer from dizziness, nausea, vomiting, diplopia and other similar phenomena when the neck is extended and turned, it means that half of the blood vessels supplying the hindbrain are narrowed or blocked. In this case the patient should not undergo any cervical manipulation, otherwise there is a potential risk of a stroke (Gatterbauer 2009).

2. Aneurysms and Severe Cardiovascular Diseases: An improper maneuver can cause an aortic aneurysm to rupture, particularly an abdominal aortic aneurysm. These patients often have a history of diabetes and back pain is often accompanied by abdominal pain. An abdominal ultrasound or computerized tomography will be needed for confirmation when suspected, this it would be important to recognize the red flags and know when to refer to a family physician. Some literature also illustrated the risk of severe cardiovascular diseases such as heart attacks, severe hypertension, as well as patients who are at high risk of internal bleeding (Gatterbauer 2009). This is most applicable to visceral osteopathy. If severe pain is induced by palpation or physical examination, emergent referral to the hospital must be done.

3. Bone tumors: Sudden reduction in body weight should raise an alarm. If the patient complains of pain all day, especially at night, a direct percussion over the involved bone with cause the pain to intensify. Bone tumor often arise as a result of metastasis from a primary tumor of another organ. Often times the patient's body is already weak on presentation. Every cancer patient should be approached with caution in order to avoid pathological fractures. If a bone tumor is suspected or confirmed, a thorough systemic review must be conducted to identify the source of the disease (Gatterbauer 2009).

4. Bone infection (bacterial or tuberculous): Often patients will have a long-lasting fever that is unresponsive to general over-the-counter medication. Symptoms can be accompanied with night sweats and constant pain that is intensified by direct contact over the affected area.

5. Instability of the bones and joints (trauma, fractures, osteoporosis): Functional instability caused by bone fractures or trauma often have an associated structural injury such as nerve damage. Many post-traumatic instabilities like dislocation, subluxations and rupture ligaments will require radiographic imaging to confirm the diagnosis, and if necessary corrected with surgery as soon as possible to prevent further disability. Moreover, some endocrine, congenital as well as medication-induced bone disorders may also cause the bone to be fragile. Some of the common endocrine disorders that affect the bone include Osteoporosis, Osteomalacia, Diabetes, Thyroid disorders and Paget's disease. Patients with congenital anomalies, such as those with Down syndrome, may have deformities of the upper cervical spine that will alter the biomechanics in that region. Pediatric patients with congenital dysplasia and many genetic weak bone disorders must also raise some red flags during patient encounters. The therapist must find out if the symptoms are connected to an underlying disease or have a different mechanical cause. If patients are taking certain medications such as corticosteroids, painkillers and antidepressants, the bones may be weakened and their feedback during therapy can be altered (Gatterbauer 2009).

6. Inflammatory arthropathies (such as rheumatoid arthritis, ankylosing spondylitis): Inflamed tissues are particularly vulnerable to injury, therefore should not be subjected to further external stress and force. A small amount of teenage to middle-aged patients will suffer from ankylosing spondylitis, an autoimmune inflammatory arthritis. In this condition, despite the spine being stiff and rigid, the bone structure becomes extremely fragile. An improper use of physical force will cause the spine to snap, often described as a "carrot stick fracture" in medical literature. Caution is also warranted in treating patients with rheumatoid arthritis because there may be laxity of the odontoid ligament and hypermobility of the atlanto-axial joint (Gatterbauer 2009).

7. Severe neurological damage: One of the most devastating neurological condition associated with lumbar plexus is the Cauda Equina Syndrome. This condition arise due to the acute loss of function of the lumbar nerve roots and related sacral nerves, leading to severe lower back pain, bladder and bowel dysfunction, loss of sensation around the perineum and lower limbs as well as progressive muscle weakness. If patients showed any signs and symptoms suspicious of a lumbar sacral nerve damage, immediate referral should be made to rule out Cauda Equina Syndrome, otherwise a surgical nerve decompression is imminent or the patient faces a grim consequence. Other neurological disorders such as spinal cord injury and myelopathies with positive neurological signs must be referred for proper medical care (Gatterbauer 2009).

8. Patient's refusal to give consent: An osteopathic therapy should never be administered if the patient has not given permission or the patient fails to cooperate. If the patient has not been examined thoroughly or if the patient cannot relax due to excessive pain, further workups and referrals must be directed to a medical doctor to determine the exact diagnosis (Gatterbauer 2009).

The following is a table summarizing the majority of the contraindications documented in academic literatures.

Absolute Contraindications of Osteopathy	Relative Contraindications of Osteopathy
<p><u>General issues</u></p> <ol style="list-style-type: none"> 1. No permission given by patient 2. Contraindications have not been established 3. No thorough medical history and physical examination have been conducted <p><u>General Medical Conditions</u></p> <ol style="list-style-type: none"> 1. Patient has an underlying medical/surgical emergency 2. Acute abdominal pain 3. Sudden unexplained nausea, vomiting or diarrhea <p><u>Cardiovascular disorders</u></p> <ol style="list-style-type: none"> 1. Hypertensive crisis with BP >190/110 bpm 2. Tendency to collapse (low BP, low BM) 3. Untreated cardiac insufficiency and arrhythmia <p><u>Neurological/Neurovascular disorders</u></p> <ol style="list-style-type: none"> 1. Suspected vascular occlusions 2. Acute, intense headache 3. Acute neck stiffness 4. Strong unexplained vertigo 5. Acute paresthesia/paralysis 6. Cauda-Equina Syndrome 7. Sudden visual disturbances <p><u>Obstetric & Gynecological disorders</u></p> <ol style="list-style-type: none"> 1. Symptoms that risk fetal loss such as contractions and vaginal bleeding 2. Abnormal prenatal tests during pregnancy <p><u>Psychiatric disorders</u></p> <ol style="list-style-type: none"> 1. Untreated psychosis 2. Underage or mentally incompetent patients who are unable to give consent 3. Post-traumatic stress 4. Suicidal patients 	<ol style="list-style-type: none"> 1. Patient does not feel safe as the therapist poses certain risk to the patient 2. Unnecessary therapy for a condition that may require another form of therapy 3. Therapist does not know his or her own limits 4. Therapy does not benefit the patient

(Gatterbauer 2009)

Discussion

When a patient first comes to see a manual osteopath, a consultation must be performed via case history, physical examination and interpretation of existing diagnostic findings. This initial interview will help manual osteopaths decide which techniques can or cannot be used on that particular patient. This is why it is crucial for a therapist to know how to take appropriate medical history and examine the patient's health correctly (Gatterbauer 2009). The manual osteopath must also be able to tailor the therapeutic session to the patient's individual situation. Through practice, the practitioner must learn to adapt the techniques and the positioning of the patient. Every patient is unique and different, therefore it is important to listen carefully to the patient's feedback during therapy. OMT should never be started without the permission and consent of the patient, nor if the patient is unable to assume a relaxed position due to pain or if the practitioner is uncertain about how to perform a technique (Gatterbauer 2009).

All osteopathic practitioners have to be aware of the possible effects of their decisions and also have a duty to inform patients about all details, potential risks and side effects relevant to the therapy. This is made even more difficult by the fact that no one can ever guarantee the success of a therapy and therefore never be 100% sure of the outcome of their decisions. If no mortal danger exists for the patient, a decision for or against OMT is not always easy to make. Nevertheless, a therapy should never bring harm to a patient. When in doubt, caution is always the better course of action (Hartman 1996).

After the patient has been informed, it is their decision to give further consent. If OMT does not produce any obvious beneficial effect, and the patient's symptoms do not improve after 3 or 4 sessions or if the condition of the patient deteriorates, a change to another therapist or form of therapy has to be considered (Gatterbauer 2009). OMT is a therapy that will assist the healing ability of the body, not a therapy that will cure disease. A good practitioner must know his or her own limits and must never venture beyond his or her area of expertise.

3 DO NOT's to Protect Yourself

1. **DO NOT provide therapy if you don't know what you are doing.** If you do not know how a manual technique is performed and cannot grasp the safety issues surrounding it, don't perform it. Learn each technique thoroughly and become confident through a lot of practice. Health is priceless. Never have the "I see other people doing it therefore I can do it" mentality.
2. **DO NOT provide therapy if you have no idea where the problem lies.** Understanding the anatomy can help locate areas of structural abnormality. Understanding the physiological and neurological interactions will help guide your assessment and direct you towards a safe practice.
3. **DO NOT provide therapy if your patients are not willing.** To challenge the patient's consent is to risk your own professional conduct and will soon be followed by lawsuits and imprisonment. Respect the patient's decision and rights. If the patients don't feel safe or refuses your therapy, there is no need to continue further.

Conclusion

With formal training, extensive hands-on experience and a strong medical or healthcare background, osteopathic manual therapy is actually quite safe. However, if performed by non-professionals with a careless disregard for safety measures and the lack of education to recognize medical caveats, the risks and adverse events will inevitably increase. With the overall trend toward complementary and alternative medicine, osteopathy manual practice will continue to evolve and attract the attention of those who have suffered intractable pain. The public demand is at an all-time high with the desire to have alternative treatments for their chronic pain conditions that are both safe and efficacious. By working closely together with other professions in the medical community, it is important for manual osteopaths to create a common safety standard that all practitioners can adhere to. Such a standard could help osteopathic care gain recognition and popularity within the mainstream healthcare system in Canada. Knowing how to identify the major risks and contraindications to osteopathic therapy is vital for both the practitioner and the patients in order to prevent side effects that lead to severe disability, at the same time, it will ensure that tragedies will not be repeated. In the future, this will help the people who seek osteopathy maintain the level of trust they deserve and help promote the safety standards within the profession.

Bibliography

Carnes, D., et al. (2010). "Adverse events and manual therapy: a systematic review." Manual Therapy **15**(4): 355-363.

Chila, A. G. and A. O. Association (2010). Foundations of osteopathic medicine, Lippincott Williams & Wilkins.

Ernst, E. (2007). "Adverse effects of spinal manipulation: a systematic review." Journal of the Royal Society of Medicine **100**(7): 330-338.

Gatterbauer, A. (2009). "Contraindications in Osteopathy." Unpublished Master Thesis.

Hartman, L. (1996). Handbook of osteopathic technique, Nelson Thornes.

Rajendran, D., et al. (2009). "Monitoring self-reported adverse events: A prospective, pilot study in a UK osteopathic teaching clinic." International Journal of Osteopathic Medicine **12**(2): 49-55.

Rothwell, D. M., et al. (2001). "Chiropractic manipulation and stroke a population-based case-control study." Stroke **32**(5): 1054-1060.

Citing Internet Sources

Pourgol, Shahin. (2014). What are the Differences Between Manual Osteopathy & Chiropractic? National Academy of Osteopathy. <https://www.youtube.com/watch?v=PyyWTNZWA-I> (accessed January 2015).

National Academy of Osteopathy. (2010). What is the Difference Between a Manual Osteopath and a Chiropractor? National Academy of Osteopathy. <http://www.nationalacademyofosteopathy.com/faq.html> (accessed January 2015).